

CLAIMS

1. (originally filed) A semiconductor structure comprising:
a semiconductor substrate;
a dielectric layer comprising lanthanum, aluminum, oxygen, and nitrogen over the semiconductor substrate; and
an electrode layer over the dielectric layer.
2. (originally filed) The semiconductor structure of claim 1, further comprising an interfacial layer between the semiconductor substrate and the dielectric layer.
3. (originally filed) The semiconductor structure of claim 2 wherein the interfacial layer comprises silicon, nitrogen, and oxygen.
4. (originally filed) The semiconductor structure of claim 2 wherein the interfacial layer comprises aluminum, nitrogen, and oxygen.
5. (originally filed) The semiconductor structure of claim 1 wherein a concentration of nitrogen in the dielectric layer is higher adjacent the electrode layer as compared to adjacent the semiconductor substrate.
6. (originally filed) The semiconductor structure of claim 1 wherein the dielectric layer is amorphous.
7. (originally filed) The semiconductor structure of claim 1 wherein the semiconductor substrate is selected from a group consisting of monocrystalline silicon, gallium arsenide, semiconductor on insulator, silicon germanium, and germanium.

8. (originally filed) The semiconductor structure of claim 1, wherein the electrode layer is a gate electrode.
9. (previously presented) The semiconductor structure of claim 1 wherein at least one element of the dielectric layer is graded from zero to an amount greater than zero.
10. (originally filed) A semiconductor structure comprising:
 - a first conductive layer;
 - a dielectric layer comprising lanthanum, aluminum, oxygen, and nitrogen over the first conductive layer; and
 - a second conductive layer over the dielectric layer.
11. (originally filed) The semiconductor structure of claim 10, wherein the first conductive layer is a floating gate.
12. (originally filed) The semiconductor structure of claim 10, wherein at least one of the first conductive layer and the second conductive layer is a capacitor plate.
13. (originally filed) The semiconductor structure of claim 10, wherein the dielectric layer has a concentration of nitrogen which is higher in a center portion of the dielectric layer as compared to portions adjacent both the first conductive layer and the second conductive layer.
14. (originally filed) A semiconductor structure comprising:
 - a semiconductor substrate;
 - a first dielectric layer formed over the semiconductor substrate;

a second dielectric layer comprising lanthanum, aluminum, oxygen, and nitrogen formed over the first dielectric layer; and
an electrode layer over the dielectric layer.

15. (originally filed) The semiconductor structure of claim 14 wherein the first dielectric layer is less than approximately 10 angstroms (1 nanometer) thick, and the second dielectric layer is between approximately 20-90 angstroms (2-9 nanometers) thick.

16. (originally filed) The semiconductor structure of claim 15 wherein the first dielectric comprises one of silicon oxide, oxynitride, and aluminum oxide.

17. (originally filed) The semiconductor structure of claim 14 wherein the first dielectric layer is between approximately 10-90 angstroms (1-9 nanometers) thick, and the second dielectric layer is between approximately 5-20 angstroms (0.5 to 2 nanometers) thick.

18. (originally filed) The semiconductor structure of claim 17 wherein the first dielectric layer has a dielectric constant (κ_e) in excess of 5.

19. - 40. (withdrawn)

41. (canceled)

42. (currently amended) A semiconductor structure, comprising
a semiconductor substrate; and
a dielectric feature ~~comprising~~ consisting of lanthanum, aluminum, nitrogen, and oxygen over the semiconductor substrate.

43. (originally filed) The semiconductor structure of claim 42, wherein the dielectric feature consists of nitrided lanthanum aluminate.

44. (originally filed) The semiconductor structure of claim 42, wherein the dielectric feature comprises one of a gate dielectric, an etch stop layer, a trench liner, and a sidewall spacer liner.

45. (currently amended) The semiconductor structure of claim 42, wherein the dielectric feature functions as a ~~diffusion barrier~~ gate dielectric.